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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,591	11/13/2003	Wei Zou	H0005211 (HON0002/US)	8998

7590 08/03/2005

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EXAMINER

KORNAKOV, MICHAEL

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/712,591	Applicant(s) ZOU ET AL.	
	Examiner Michael Kornakov	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 17-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-28 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/10/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicants' election with traverse of claims 1-16 in the reply filed on 06/02/2005 is acknowledged. However, the Applicants have failed to point out wherein either (1) the reasons advanced by the Examiner to establish distinctiveness between the inventions as claimed and grouped or (2) the evidence of separate status, classification and/or search are in error. Therefore the restriction requirement is made **FINAL**. Claims 17-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Claims 1-16 are examined on the merits.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-6, 8-12, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa et al (U.S. 5,846,335).

Maekawa teaches removing microscratches on the surface of semiconductor wafer by providing pressure and relative movement between the substrate and a polyurethane cleaning member (reads on "polishing pad", as instantly claimed), while applying aqueous solution to the surface of semiconductor wafer, thus polishing the wafer surface (col.2, lines 26-31, 35-37; col.6, lines 20-27; paragraph, bridging col.6 and 7; col.9, lines 34-50). Maekawa does not specifically indicate the average density of microscratches of certain sizes on the polished surface, as per the instant claims 1-6. However, it is noted here that the processing steps of Maekawa are identical to those instantly claimed and therefore the recited parameters as per the instant claims 1-6 are reasonably expected within the teaching of Maekawa. Regarding claims 11 and 12, reciting processing parameters, such as pressure between the polishing pad and the

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substrate and rotational speeds of the substrate and polishing pad, it is noted here that such parameters are result effective, because they affect the speed of removal of some surface material and therefore efficiency of the polishing process and; on the other hand, the desired quality of the polished surface, especially its roughness and the presence of microscratches of certain width/depth. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney 205 USPQ 215 (CCPA 1980). As to the specific dimensions of the substrate and polishing pad, it is noted here that 4 to 8 inches diameters of semiconductor wafers are conventionally utilized in the art and to choose the proper diameter of the polishing pad to polish such wafers is within the skills of ordinary skilled in the art. Furthermore, 4 to 8 inches substrates are conventionally polished with polishing pads of larger diameters, which is evidenced by He (U.S. 6,783,437), who teaches the wafer of 8 inches in diameter being polished with polishing pad of about 20 inches in diameter (col.7, lines 37-47). Regarding claim 14, the recited water quality is conventionally utilized in the art for polishing and therefore the use of such water will be obvious within the teaching of Maekawa. Regarding claims 15 and 16, Maekawa teaches that his cleaning method may be any of various steps of the semiconductor fabrication process (col.9, lines 51-55) and therefore one skilled in the art motivated by Maekawa would have found obvious to further process the semiconductor wafer of Maekawa, wherein a component of a magneto resistive memory device, such as a giant magneto resistive device may be provided upon necessity and with the reasonable expectation of success.

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6. Claims 1-10, 13,14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotozaki et al (6,494,985).

Sotozaki teaches finish polishing process, which is utilized for removing microscratches on the surface of previously polished semiconductor substrate by providing pressure and relative movement between the substrate and a polishing pad, while applying pure water to the surface of semiconductor substrate, thus polishing the wafer surface. The polishing pad of Sotozaki comprises a polymer (col.8, lines 25-43; paragraph, bridging col.13 and 14; col.14, lines 21-25, 34-38). Sotozaki does not specifically indicate the average density of microscratches of certain sizes on the polished surface, as per the instant claims 1-6, 13. However, it is noted here that the processing steps of Sotozaki are identical to those instantly claimed and therefore the recited parameters as per the instant claims 1-6, 13 are reasonably expected within the teaching of Sotozaki.

7. Claims 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotozaki et al (6,494,985) in view of Han et al (U.S. 6,583,953).

While teaching that polishing the semiconductor substrate is conventionally utilized on different stages of semiconductor manufacturing, Sotozaki does not specifically indicate manufacturing a giant magneto resistive device. However, manufacturing a giant magneto resistive device requires some conventional steps, including polishing the semiconductor substrate, utilized for the manufacturing of such device, which is indicated by Han (paragraph, bridging col.4 and 5). Therefore one skilled in the art motivated by Han and Sotozaki would have found obvious to utilize the

polishing technique of Sotozaki while producing the giant magneto resistive device of Han with the reasonable expectation of success.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov
Primary Examiner
Art Unit 1746

07/29/2005